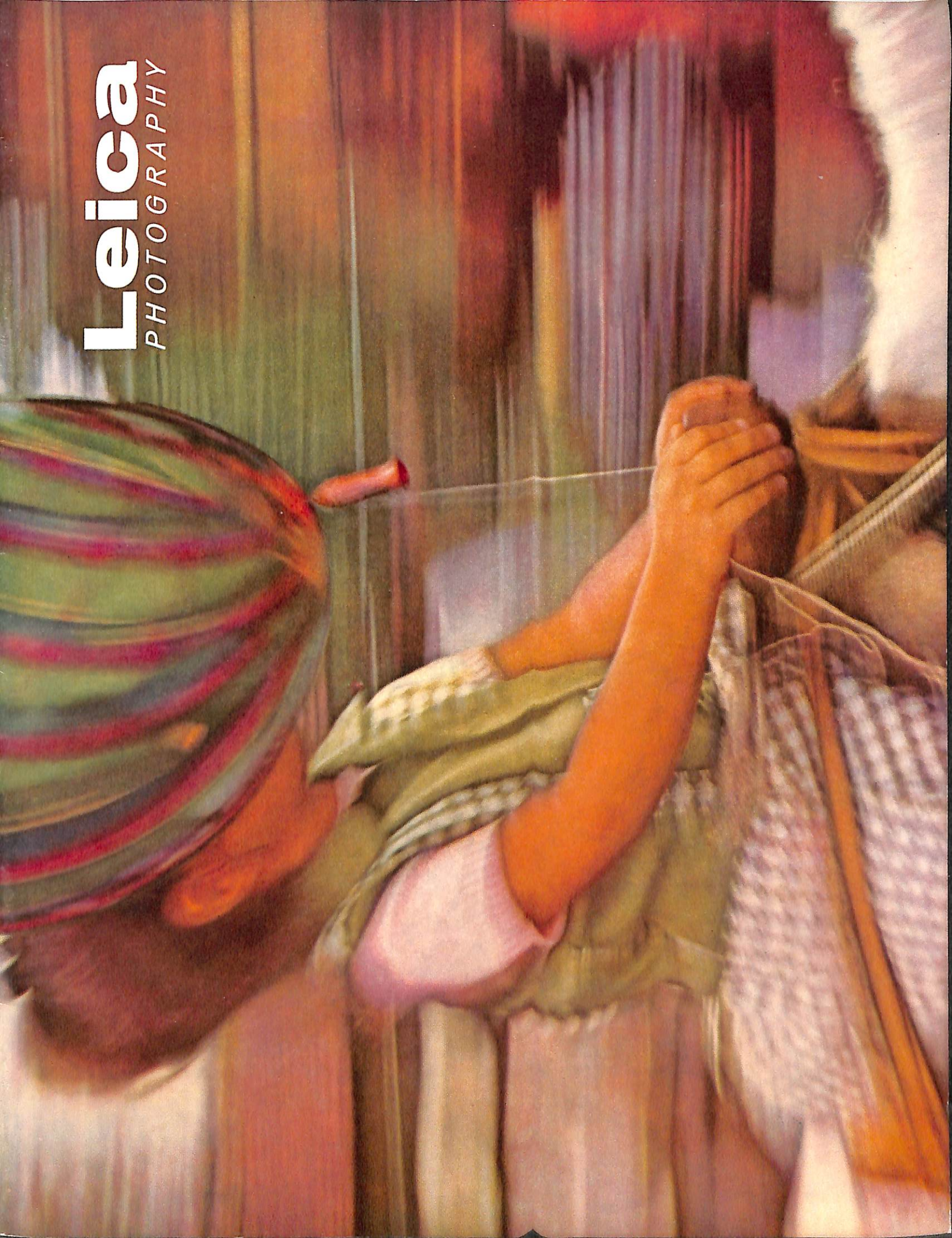


Leica
PHOTOGRAPHY





Leica

PHOTOGRAPHY®

VOLUME 19 • NUMBER 2 • 1966

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COVER

Pedro Meyer

A pony ride is gay as a merry-go-round in Mexico City's Chapultepec Park (see Show Place). The camera was a Leica M3, the film Kodak Ektachrome, 1/4 of a second at f/22.

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◀ INSIDE COVER

Y. Ernest Satow

Rice fields on Shikoku Island in Japan as seen from a helicopter on a fine spring day. The photographer tells us he used a Leica M3, Visoflex Housing and "my favorite lens," the 125mm Hektor. Film was Kodak Plus X, 125th at f/5.6.

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The editors are happy to consider original articles on photography with the Leica and photographs taken with Leica cameras and lenses. All manuscripts and photographs should be accompanied by stamped, self-addressed return labels.

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GRUPO ARTE FOTOGRAFICO

The Grupo Arte Fotografico of Mexico City was born about two years ago. Engineers, doctors, businessmen and manufacturers in "real" life, its fourteen members share a zeal for photography and for excellence in their photographic endeavors.

The "Grupo" came into being because a handful of men were dissatisfied with the established way of things at the Camera Club of which they were members. They felt it was meaningless to confine their photography to a contest and a possible prize for "best print" once a month. Unable to change the status quo, they formed their own group. "Our main aim," says member Pedro Meyer, "has been to constantly try to improve the quality of our work through as much constructive criticism as is possible." The excellence must be arrived at through effort and search and the affirmation of one's own personal viewpoint.

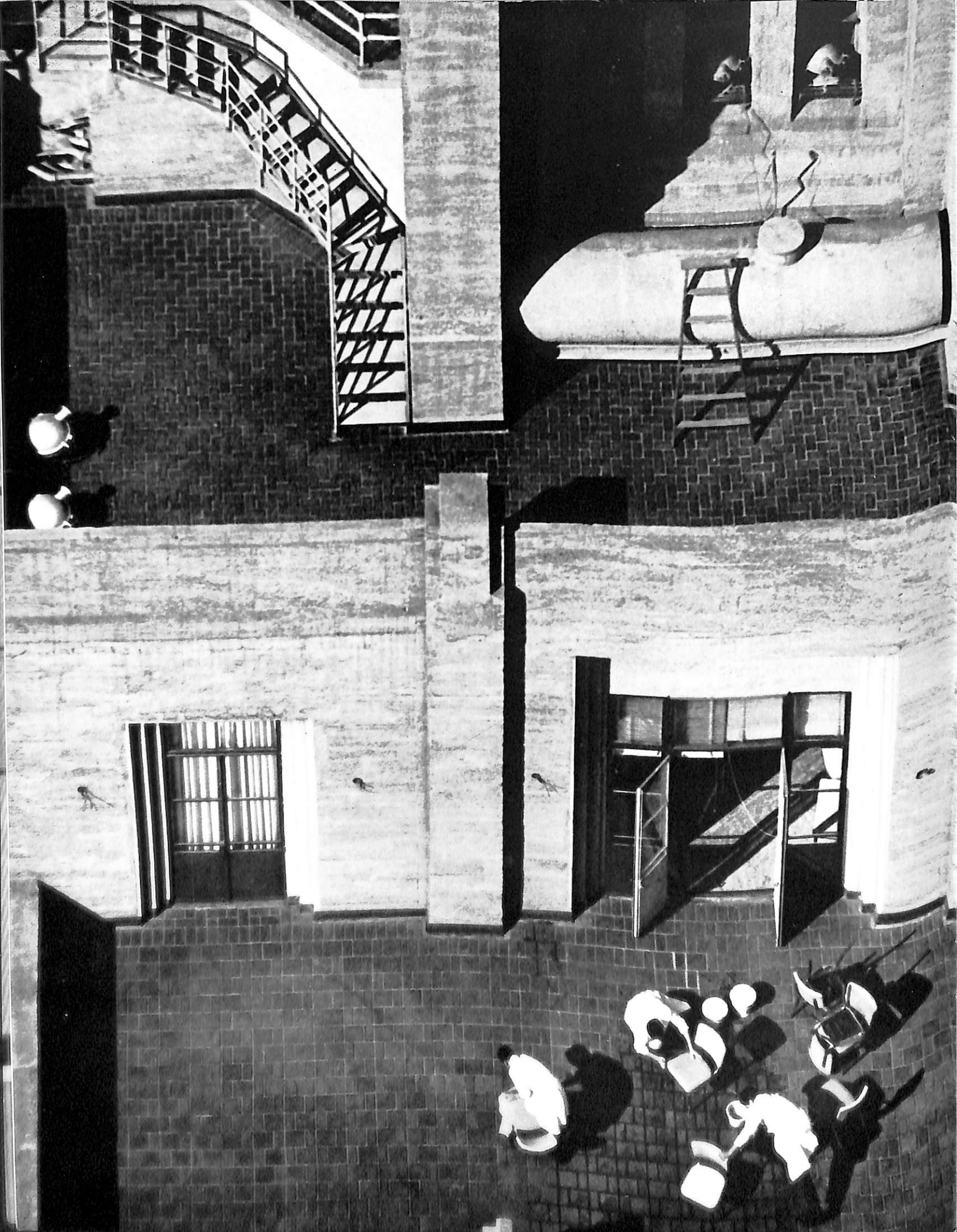
The group meets approximately once every two weeks to evaluate and comment upon one another's

work. Outside criticism from professionals in photography, and upon occasion from artists in other fields, is sought whenever possible. Discussions cover not only the creative and "artistic" aspects of photography but the technical as well. The individuality of each member is not only encouraged but stressed. The group strives to keep in touch with what is going on photographically in the rest of the world, although this is sometimes difficult.

Most members have their own darkroom, and all do their own processing. This includes developing and printing color as well as black and white work.

Often, members engage in major projects, separately or with one another. Mr. Meyer, a manufacturer of lamps and ceramic giftware, has put together a remarkable tape-slide show from his color photographs of Mexico City's Chapultepec Park. In it he seems to have observed and captured every aspect, every facet of the well-known landmark, and has skillfully synchronized the photographs to music evocative of the image's mood. He spent one year on this project. The slide show, of which our cover photograph is a part, becomes a kaleidoscope of sound







Carlos Fernandez, Retailer

and color — one man's response to a familiar subject.

The "Grupo" organizes an exhibition of its members' work every year. This year's, to be held in June and July, will include a "team" project by two members — an essay in "exciting abstract color" of an old, abandoned hacienda.

All members are Leica users. One of them is sales manager for the Leitz representatives in Mexico — the only one, incidentally, whose professional life is even remotely connected with photography.

Leica Photography salutes this dedicated group as amateurs in the true sense of the word.

Photos Left and Below, **Jose Luis del Campo**, Insurance Sales Supervisor



Elpros for Leicaflex close-ups / *Norman Rothschild*

front lenses are achromats

The Elpros (achromatic front lenses) extend the already close focusing range of Leicaflex lenses, without your having to compute any close-up exposure factors. There is no need to consult complex tables, to recalculate exposure. All you need do is to screw the desired Elpro into the Leicaflex lens, move in close to your subject until it appears sharp in the microprism focusing screen, match the exposure needle pointer and press the button. The Leicaflex finder will show you the exact framing, no matter which Leicaflex-Elpro combination you use. You actually get a pictorial preview of the finished slide (I'm a color bug you know!) in the Leicaflex finder.

The Elpros act like relatively weak magnifying glasses. To get an idea of how they work with your Leicaflex, hold one of the stronger Elpros up close to your eye. You will, of course, not be able to see distant objects clearly at this point. But if you bring an object up close to the Elpro in front of your eye, at some point you will be able to see it clearly. (This, by the way, is the correct way to use a magnifier.) In the manner as just described, Elpros enable your Leicaflex lens to focus on close objects.

One of my first questions about these lenses, naturally, was which combination of Elpro and Leicaflex lens is best for a specific picture situation. Part of the answer has to do with the area to be covered. Table 1 shows that Elpro VIa, used with the 50mm f/2 Summicron-R, sees a field size of $7\frac{1}{4}'' \times 10\frac{7}{8}''$ with the lens set at infinity. Naturally, if the object you are going to photograph fits in an area this size, that is the correct Elpro-Leicaflex lens combination to use.

The same table shows that by extending the lens

to its closest marked focusing distance, you can come closer to the subject, to cover only $3\text{-}5\frac{5}{8}'' \times 5\text{-}7\frac{1}{16}''$, and reproduce the subject larger. One tip here: unless you wish the edges of the subject to touch the edge of the picture frame, make sure it is somewhat smaller than the actual field area seen by the lens. This will leave enough room all around to aid you in composing your picture properly.

which lens when?

The next question was when to use a 50mm lens and Elpro and when a longer lens with a different Elpro — especially if magnification and field size are about the same. Answer: it all depends. Even though the image size is the same, the perspective you get in each case will be different. A longer lens will require a weaker Elpro supplementary than a 50mm lens will to obtain the same image magnification. This also results in a greater lens-to-subject distance. For example; with Elpro VIb and the 50mm f/2 Summicron-R set at 20", the Elpro-to-subject distance is $5\text{-}9\frac{1}{16}''$; for a magnification close to this, 1:2.8 using the 135mm f/2.8 Elmarit-R and the VIIa Elpro, the Elpro-to-subject distance is $16\text{-}3\frac{1}{16}''$.

The picture made with the shorter lens and more powerful Elpro will show more objects in the background than the shot made with the longer lens with weaker Elpro supplementary because the shorter lens has a wider angle of acceptance. There will also be a difference in perspective. The perspective rules of regular photography also apply in closeup work. The background in the shot made with the short lens plus strong supplementary will seem further away (deeper

All photos taken at closest focus. Birds are $2\frac{5}{8}''$ high.

50mm Summicron-R alone — 20"



50mm with Elpro VIa — $8\frac{1}{4}''$



perspective) than in the shot made with the longer lens and weaker supplementary (shallow perspective). (As noted previously, the latter combination allows for somewhat more Elpro-to-subject distance, making it easier to place lights, change filters, etc.)

Of course if you want maximum magnification, choose the combination opposite the smallest field size shown in the tables. The 50mm Summicron-R with Elpro VIb focused at 20" gives almost half life-size reproduction (1:2.6), the largest image size available in the Elpro combinations. Close behind it is the 135mm Elmarit-R with Elpro VIIa (1:2.8).

Please note that depth of field does not depend on any inherent characteristic ascribed generally to focal length. The usual statement is that short lenses have inherently greater depth of field than long lenses. This is true only when both are used *from the same working distance*. In this case the shorter lens, with its smaller image magnification, will have the greater depth of field. But moving the shorter lens closer to the subject so that the image size is the same as that given by the longer lens from the greater distance will produce depth of field the same as that offered by the longer lens.

All this, of course, assumes that all other factors (such as size of circle of confusion, print or slide magnification and viewing distance) are kept constant. The guiding factors therefore, as far as you are concerned, are image magnification and f/stop in use. The larger the image magnification and/or f/stop, the shallower the depth of field — all other things being equal.

To prove my point I'm going to ask you to look at the tables again. Note that when the combination of Elpro VIb and 50mm lens at f/16 and focused at 20", or Elpro VIIa and 90mm lens at f/11 and focused at 28" are used, the amount of depth of field is the same (3/8"), even though two lenses of different focal length were used. (*The 90mm is further away from the subject, however . . . Ed.*)

Naturally you'll want to use the largest practical

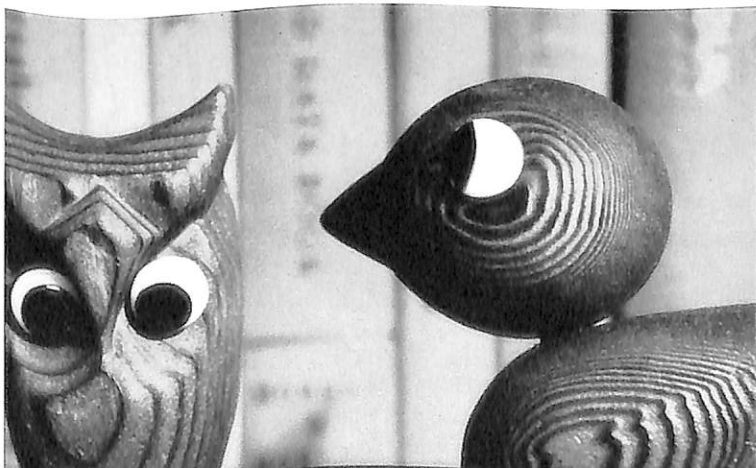
opening and a correspondingly higher shutter speed if you wish to concentrate sharp attention on the object focused on, by throwing other objects out of focus. You may also be forced to use a larger opening and a high shutter speed if you must stop action, a butterfly on the move for example. On the other hand, if as much as possible has to be sharp, both in the subject focused on and in the background and foreground, then you'll wish to use as small a stop as possible and a slower shutter speed.

With this latter combination the use of a tripod is highly recommended. For shooting small objects the Leitz Pocket Tripod plus the large ball-socket will prove to be invaluable, especially where the subject is close to the ground (as in nature work) or is in otherwise inaccessible places. Mounted on a larger, conventional tripod, the Leitz large ball-joint tripod head allows getting just the tilt you want in any direction, while at the same time offering rigid non-slip support.

A statement I made earlier, might make the more optically critical Leicamen raise his eyebrows. This was a recommendation to use the Leicaflex lens-plus-Elpro *wide open* for minimum depth of field. Isn't it a fact that you can't use supplementary lenses wide open, and get Leica-quality results? My answer would be "yes" if we were talking about ordinary simple supplementary lenses. But the Elpros are really different. They are not simple single-element supplementaries, but are two element, color-corrected achromats. They have been computed to maintain the maximum definition of the Leicaflex lenses. Thus, it is possible in using the Elpros to get good sharp definition even with the lens wide open. The micropism screen of the Leicaflex makes focusing so positive that, especially with the large image magnifications obtained in closeup work, it was unnecessary for me to stop down to make up for possible focusing error.

If you've worked with a bellows or extension tubes, you know of the need to give extra exposure when

50mm with Elpro VIb — 5-9/16"



90mm Elmarit-R with Elpro VIIa — 11-13/16"



ELPRO CLOSE-UP LENSES

Leicaflex Lens	ELPRO	Catalog Number And Price	Distance Scale Setting	Approx. Distance		Field covered (inches)	Reproduction ratio	Depth of Field (inches)		
				Subject to film	Subject to ELPRO			f/8	f/11	f/16
50mm SUMMICRON-R f/2	VIa	16,531 \$28.50	∞	19-11/16	16-1/16	7-1/4 x 10-7/8	1:7.7	1-3/8	1-7/8	2-3/4
			20"	12-1/8	8-1/4	3-5/8 x 5-7/16	1:3.8	25/64	9/16	25/32
	VIb	16,532 \$28.50	∞	11-7/8	8-3/16	3-11/16 x 5-9/16	1:3.9	13/32	9/16	13/16
			20"	9-1/2	5-9/16	2-7/16 x 3-11/16	1:2.6	3/16	9/32	3/8
90mm ELMARIT-R f/2.8	VIIa	16,533 \$36.00	∞	29-1/16	24-1/16	6-5/16 x 9-1/2	1:6.7	1-1/16	1-1/2	2-1/8
			28"	17-7/16	11-13/16	2-7/8 x 4-5/16	1:3.0	17/64	3/8	17/32
135mm ELMARIT-R f/2.8	VIIb	16,534 \$36.00	∞	59	53-1/4	9-5/16 x 14	1:9.9	2-1/4	3-1/8	4-1/2
			5'	33-1/2	27-3/16	4-1/4 x 6-3/8	1:4.5	17/32	23/32	1-1/16
	VIIa	16,533 \$36.00	∞	29-13/16	24-1/16	4-1/4 x 6-3/8	1:4.5	17/32	23/32	1-1/16
			5'	23-1/8	16-13/16	2-5/8 x 3-15/16	1:2.8	7/32	5/16	7/16

Focusing data are given for ∞ and the shortest engraved distance setting of the Leicaflex lenses. Since the lenses can slightly exceed these engraved settings, somewhat higher reproduction ratios can be obtained than are shown in this table. All figures are approximate, having been rounded off for convenience.

making closeups. This is not necessary when you use lenses like Elpros. Since the lens-to-film distances used in closeup photography with the Elpros are about the same as those used at normal distances with the Leicaflex lenses, f/values remain unchanged for practical purposes. You don't have to recalculate exposures. Whats more, the Elpros do not interfere with the exposure automation of the Leicaflex lenses.

As in other photography, you may wish to use filters in closeup work with the Elpros. In this case, place the Elpro on the lens first and attach the filter to it. To insure accurate focus, focus with the filter in place. If the filter is too dark to focus through, then substitute a lighter-colored one, such as a Leitz UV during focusing. Then change to the darker filter

when taking the picture. Incidentally, don't forget to apply the filter factor to the exposure. Although the Elpros eliminate the closeup extension factor, the filter factor will still apply when you use a filter.

Besides using a tripod, there is also another very important focusing and framing technique that you musn't overlook. In the Leicaflex, all focusing is done in the center microprisms area. So, it is important that, after focusing, the same lens-subject distance be maintained. If you should place the object focused on elsewhere in the frame for purposes of composition. Therefore, to recompose your closeup picture after focusing, move the camera in a horizontal or vertical direction. Do *not* tilt it to change the composition, as this may also change the focus.

135mm Elmarit-R with Elpro VIIb - 27-3/16"



135mm with Elpro VIIa - 16-13/16"



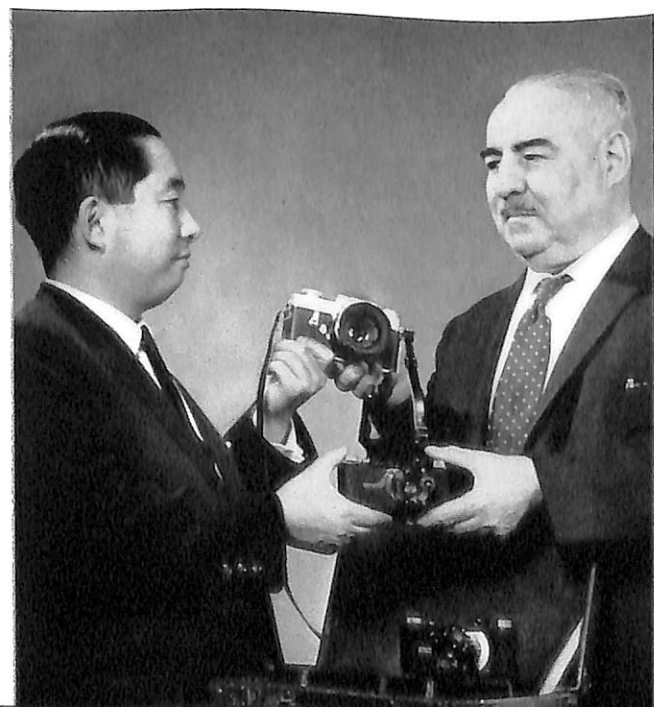
focusing on...

color courses. Helen C. Manzer, Ph.D., FPSA, ARPS, the widely-known color photographer, teacher, judge, exhibitor and lecturer, will again offer courses in color photography this summer and fall.

Courses will be held in the famous Lakes Region of New Hampshire. The first course is from July 25 to August 5; second course, August 8 to August 19. Two special courses featuring fall foliage coloring are also offered. First of these courses is from September 25 to September 30 and the second from October 2 to October 7. For more information about the New Hampshire courses, write to Ruth L. Wiesen, Post Office Box 245, Laconia, New Hampshire 03246.

happy ending. When the story of Kenjiro Nakamura's 120 Leica cameras was told (Leica Photography No. 3, 1965), we mentioned that his collection lacked a sample of the Model B with Compur shutter. And we also expressed confidence that Nakamura would, sooner or later, acquire a Model B. It turned out to be sooner.

Fred Mazzulla, a prominent Denver attorney, Leica collector and Western historian, read about Nakamura's missing specimen. And it just happened that Mazzulla had two of the scarce Model B's. He wrote to Nakamura, a world-travelling Japanese business man, suggesting a swap of the Model B for a Leicaflex, which Mazzulla's own collection of 57 Leicas still lacked. The deal was completed on Nakamura's next visit to the U.S., adding a plum to each of these outstanding Leica collections.



dropout. In our last issue on page 8, in the story "Leicamen In Combat," you may have looked in vain for the "photograph above" described in the story's last sentence. A last-minute flurry of copy-fitting and make-up changes caused the picture to disappear while leaving reference to it. So here, at long last, is the picture you missed. In it, Kyoichi Sawada, main prize winner in the 10th Annual World Press Photo Exhibition in the Netherlands, autographs a copy of his prize-winning photo for Mr. Henry Mann, president of E. Leitz, Inc. Mr. Mann presented Sawada with a motorized M2 in recognition of his fine work. In May, Sawada was awarded the 1966 Pulitzer Prize for news photography.

Leicaflex on Panam calendar. The September/October page of the huge (2 x 4 feet!) Pan American Airways' 1966 Clipper Cargo calendar shows the Leicaflex at work in the hands of a pretty model outside a Bavarian palace. Versions of the calendar in seven languages (English, French, Italian, Spanish, German, Portuguese and Japanese) will be distributed throughout the world. The Leicaflex was chosen as being "symbolic of the world-wide importance of West German cameras and optical products in international trade."

Leica Fotografie. Have you seen the English-language edition of "Leica Fotografie"? It's a European bi-monthly magazine filled with valuable Leica lore and pictures. Subscriptions for the U.S. and possessions are available from your Franchised Leica dealer or from E. Leitz, Inc., 468 Park Ave. S., New York, N. Y. 10016. Send a check or money order as follows: one year: \$4.50; two years: \$8.25; three years: \$12.00.

it's a bird! it's a plane! it's p.i.! / *Harvey Shaman*

hard work, imagination spark Photographic International

"We found you can take a helicopter, fly to a location, take your photographs and come back more economically, at times, in a city the size of Los Angeles, than you can by driving your own car.

"The other day I did an entire job by helicopter. We landed on the client's parking lot, took the Leicas with the 35mm and 135mm lenses and went all the way around the plant; did the architectural things, the flowers and all that, got back into the helicopter, made three or four aerials and then flew back to the airport. Total time: 40 minutes.

"The same job, in heavy traffic in the middle of the afternoon would have taken four and a half hours, mostly in wasted labor. I would have had to charge the client for a full day. So, by absorbing the cost of a helicopter, I was able to charge him the same amount yet do the job in 40 minutes. The client was happy, and I was happy. The same day I was able to get in a full day's shooting at a defense plant. And then, when I called in, Larry Lee, our production supervisor, said there was something at Goodyear. So I went by and did a half a day's shooting there. I was back in the office by 6:30.

"One of the things we constantly keep in mind is that there is not just one way to do things. We are continually examining the routine things we do to see how we can do them easier, simpler or better."

The "we" are Tom Carroll and Jim Collison, co-owners of Photographic International, of Santa Monica, California, who have thrown out most conventional approaches to advertising, editorial, industrial and studio photography. They did this by getting rid of practically all their photographic equipment and then building up a Leica system consisting of two M3's and a full set of Leitz lenses for each of them. By concentrating on lightness, mobility and unconventional thinking to solve conventional problems, they have built a reputation which has them moving all over the world for major industrial and advertising clients.

The key to their operation is their use of 35mm film and existing light. They even use it for their "studio" work, although they no longer have a conventional studio. Jim said, "Welcome to our studio," as he opened the front door of the office. The light

flowing in from the street was soft, directional and beautifully modeled. Small objects are either photographed lying on the floor or on top of a typing table. Backgrounds are small pieces of paper, material or cardboard as the situation dictates. The camera is hand held.

For larger subjects, he took me into their open-air studio. A roll of white seamless paper suspended from a bar atop two light stands turned the parking lot behind the office and lab building into a brilliantly lighted studio. The white-painted buildings kicked the direct sunlight around to open up shadows for total lighting control.

offbeat approach

Unconventional thinking applies to their lab work as well as their shooting. The lab, which is built around a Leitz Focomat enlarger and rigid quality control, is streamlined to the point where one man can contact-print 30 or 40 rolls of film and turn out over 100 high quality 8x10 prints in a working day.

The unconventional extends to their handling of their cameras as well as to other procedures. For instance, I watched Tom Carroll do photojournalistic coverage of an Electronics Specialty Company plant. In one instance he used the combination of M3 body, Visoflex, bellows and 135mm Elmar as a hand-held camera. By loosening the track-tension screw, he was able to use the bellows as a quick-focus and follow focusing mechanism for moving subjects. By shoving the bellows all the way out, he was able to do instant close-ups. I repeat, he was shooting hand-held. Ordinary thinking would have put this equipment combination on a tripod for precision shooting instead of using it hand-held for the rapidly developing actions and situations of photojournalistic coverage.

Another favorite piece of equipment at Photographic International is the 21mm Super Angulon which permits unusual angles on ordinary subjects. In newstype situations, its use practically eliminates all focusing while giving extraordinary depth.

By working exclusively with 35mm and by thinking unconventionally, Carroll and Collison are able to outshoot other photographers to such an extent that they often wind up handling work that might



THE 135MM ELMAR is used with bellows as quick-focus lens.

normally occupy a half-dozen men.

One experience Tom and Jim outlined perhaps points up their entire philosophy.

"The reason some photographers don't get ahead," Tom pointed out, "is that they don't accept the little challenges with the same enthusiasm they have for major assignments. Take a routine thing like the annual Boy Scouts of America show. P. I. turned that from a routine job into a very exciting and rewarding experience.

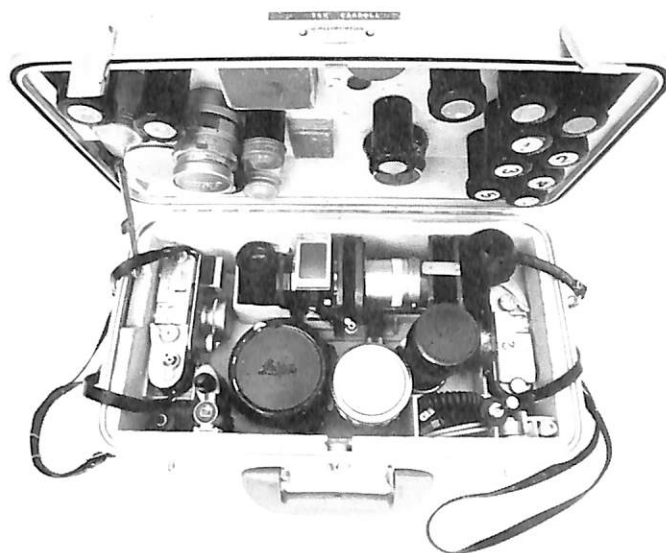
"The first year we were called in, there were five or six competing photographers in the show. We were working with Leicas and a couple of floodlights while the others were using 4 x 5 cameras and strobes. When we turned our photofloods on, all the other booths were dark by comparison, and people were attracted to us like moths to a lantern. We played it just like a carnival. 'Step right up folks, come on, get your picture now!' Everyone responded to the carnival mood, they were happy and didn't have time to get self-conscious. As a consequence, their expressions were just great. Result? We cleaned up! In less than two hours shooting we did over \$400 worth of business.

"Remember, this was a routine thing that the other photographers had been doing for years in exactly the same way. They had never been challenged, and even today, they still haven't changed their methods, even though we continue to go into this show every year and take almost all their business away.

"You know, you can tell a secret to somebody, or show him how to do it. Unless, however, the man is a believer or is seeking information, he will never accept it."

Perhaps this is the best summation of what Photographic International, in the persons of Jim Collison and Tom Carroll, is. They are believers. They believe there is a way to make photography better and more exciting and they are constantly searching out ways to do it. Their 35mm cameras and off-beat approach are the tools with which they do it.

P.I.'s CUSTOM CASE



FITTED CASE FOR LEICA was custom-designed by Photographic International members to carry their most-needed equipment into the field, with enough film for nearly any assignment.

L.A. TRAFFIC holds no terrors for P.I.-men, who fly over it.



on a Life assignment

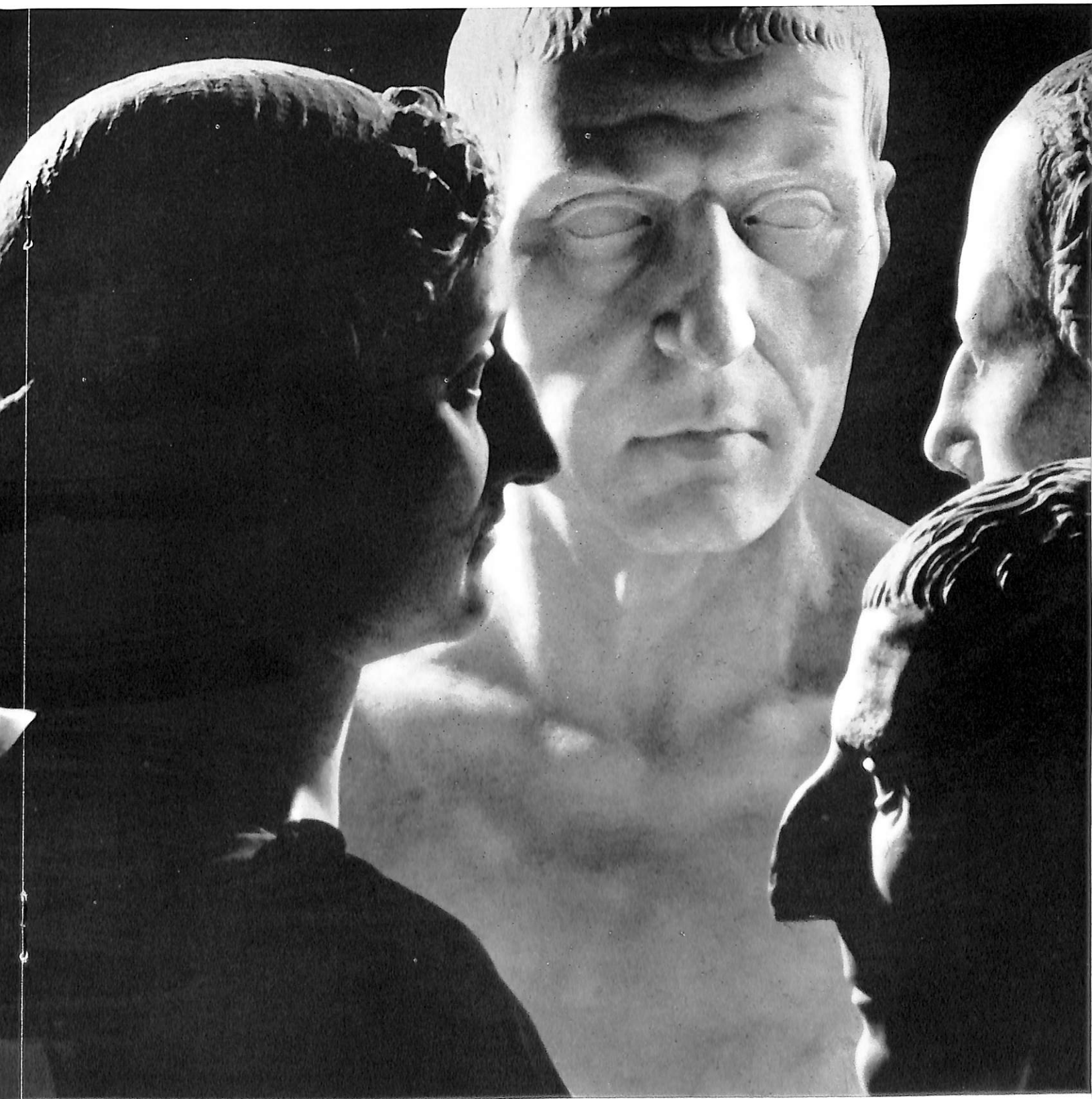
A field of work in which I have been increasingly active and which I relish has been the photography in color of some of our cultural symbols, or, if you like, man's humanity to man. *THE ROMANS*, which appeared in *Life Magazine*, was just such an assignment.

There was a time when, in dealing with this kind of subject, I would leave for location carrying a 4 x 5 camera and six loaded plate holders. Twelve exposures seemed quite enough for one day's shooting. There was always an extended period of preparation and of thinking out loud before each exposure: more often than not, there was only one exposure for each situation. It was a time for straightened perspective, and a staid, clean look to the image. Design and definition and an air of competence were the attributes most prized.

This method of working, based on acute technical knowledge and a penchant for deliberation, can yield the finest results but is limited in scope. But times have changed. The editorial demands upon the professional are now much more varied, the taste more lively . . . even outrageous. Acceptance is largely a matter of interpretation and depends quite often upon a fortuitous, unusual circumstance.

Technically speaking, this breakthrough has been made possible by reflex viewing in the 35mm camera and the availability of a great variety of lenses, from wide-angle to telephoto. It takes time and painstaking effort to set up the big camera and to check the focus as the lens is stopped down and the ground glass image gets less and less visible, while composing is achieved by point-by-point inspection. But viewing the subject through the brilliant viewfinder of the Leicaflex, one focuses with a slight turn of the lens barrel while composing becomes an instinctive, almost instantaneous evaluation. This quick response generates momentum and lends life to the passing moment. It is exhilarating to hold the Leicaflex at eye level and keep bobbing up and down and around the subject in search for the relevant angle. No sooner settled upon one aspect, one is goaded to shift, to seek something different, something unexpected. This physical grappling with the subject, this tensive to-and-fro, imbued as it were with the sense







FORO ROMANO, Via Sacra, the beginning of the Via Appia. 35mm *Elmarit-R*







CANOPUS, VILLA HADRIANA, Tivoli, near Rome. 90mm *Elmarit-R*

of pending discovery, is the mainspring of photographic creativity.

Part of the work on the ROME series consisted of photographing statues, paintings and objects in museums, and part of it was done out-of-doors, shooting historical places and monuments, which sometimes covered vast areas.

I consistently used the 35mm lens for overall scenes, the 90mm for semi-close-ups, the 200mm for big close-ups, and the 400mm for shooting details

from a distance. The 400mm lens is particularly effective in saving time and expense when shooting details which are situated above normal vision. It is much more convenient to move back far enough and employ the 400mm from a suitable vantage point than to erect a scaffolding in order to shoot level from a closer distance with a normal focal length.

During this series I occasionally used other cameras for specialized effects. Mostly, however, I relied upon the Leicaflex to see me through.

how to succeed as a law-breaker / David B. Eisendrath, Jr.

outsmart reciprocity failure

An interesting phenomenon which sometimes baffles or plagues photographers, is *reciprocity failure*. More properly, it should be called the failure of the law of reciprocity. If this confuses you even further, stick with us and we'll try to straighten you out.

Way back in 1876, Bunsen and Roscoe formulated a "Law of Reciprocity" which stated that the product of a photo-chemical reaction is dependent on the total energy employed. In simple photographic lingo this means merely that if other conditions remain constant, an exposure of, let's say, $f/8$ at $1/100$ th of a second will produce a negative of the same density as an exposure of $f/11$ at $1/50$ th, or one of $f/16$ at $1/25$ th. For general photography under normal conditions, this is what photographic exposure is all about.

However, the people who design photographic emulsions like to make films to fit the conditions under which *most* people make photographs. (You know — more people shoot pictures outdoors on bright sunny days than anywhere else!) And the films used for both personal photography and professional, functional photography are usually used at shutter speeds from about $1/25$ th to $1/250$ th of a second. That's why the films are designed to be used in this way. So, when a high-speed photographer wants to make pictures at $1/50,000$ th of a second, or an astronomer wants to make pictures with exposures that last all night, don't be too surprised when you hear that regular films used for these purposes don't always behave the way they do when used under more normal conditions. It's sort of like taking the family car to the Bonneville Salt Flats and expecting it to perform at 400 miles an hour. It just doesn't. And that's what reciprocity failure is all about.

What it boils down to is that, for general photography under normal conditions, the rules of the game are accurate and dependable. But when you work under abnormal conditions, you have to expect abnormal results. Let's get back to the family car analogy again. Let's say we take a car and give it more gas and find that when we give it X_2 amount of gas, it goes forty miles an hour. And when we give it X_3 it is moving at eighty miles an hour. So, a mathematician might look at the figures and draw

a chart and it's evident — on the chart — that when given X_4 amount of gas, the car will go one hundred and sixty miles an hour. And, of course, it's obvious that that's not true, for after a certain limit, all kinds of things come into effect like air resistance, carburetor efficiency, tire friction, and so on to limit the performance. Conversely, you can't make a car go slower, without using brakes and reduction gears, than a few miles an hour, it just stalls out on you.

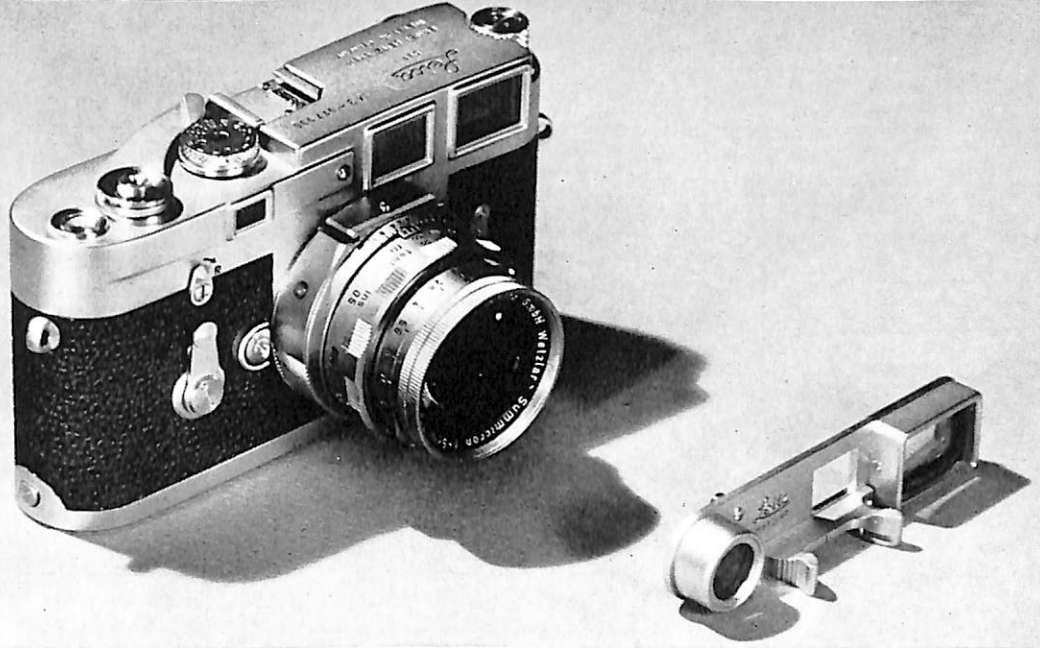
But from twenty-five miles an hour to fifty, the performance is excellent. After all, this is what the manufacturers had in mind when they designed the car.

Analogously, the same thing is true with films: in extremely bright light, where very short exposures are necessary, the films just don't respond the way they do at more normal exposures. However, when high intensity illuminants are used, the sensitivity is also increased somewhat with prolonged development. This is why, when you use certain films with some kinds of electronic flash, for example, it is suggested that you increase the developing time a little from what you'd give for more normal photography. Unfortunately, low-level exposures don't respond so well to manipulation, and with some materials, to maintain proper contrast, you must give several times more exposure than estimated, and then cut back on the development.

With some materials, surprisingly enough, low energy exposures simply can *not* be made, no matter how long the exposure, for the latent image decays faster than it can build up. It's like a bucket that you are trying to fill up from a faucet that is producing only one drop an hour. Theoretically, in one thousand hours you should have a thousand drops. But when there's evaporation going on, you could wait for eternity and never get a bucketful.

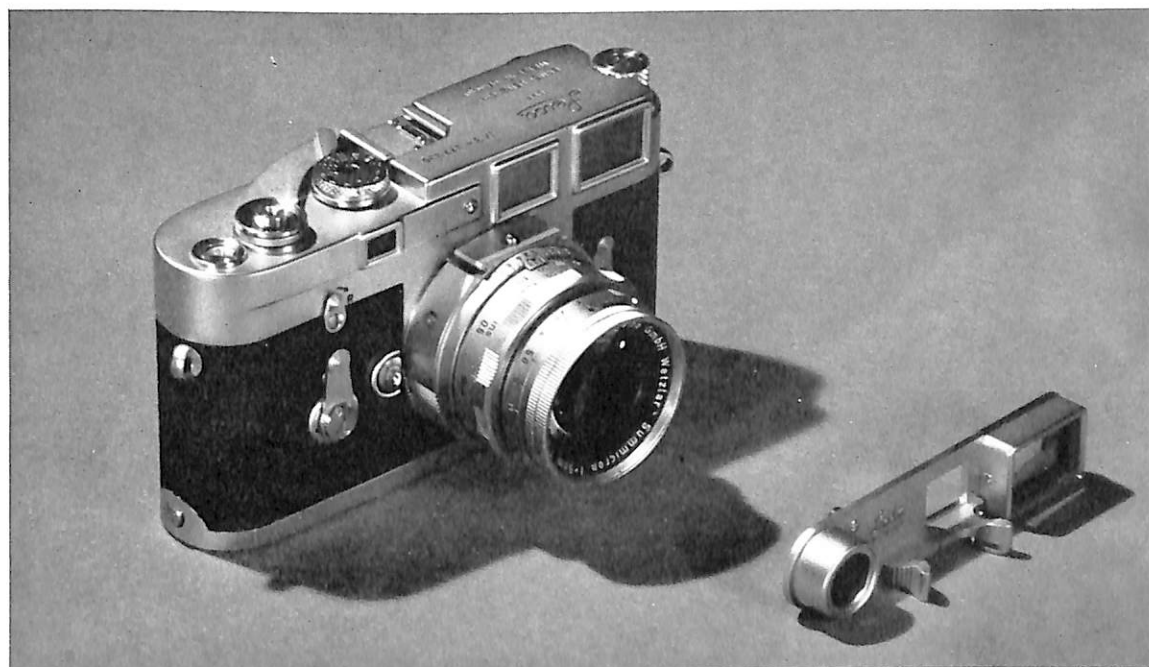
Now we've been telling you that for very short or very long exposures your films don't respond normally, and as a result you not only get less exposure than careful calculations would indicate, but also some change in contrast. In color films we have these problems along with a new one: color shift.

Modern day color films, as you probably know, are composed of three different emulsions. But although

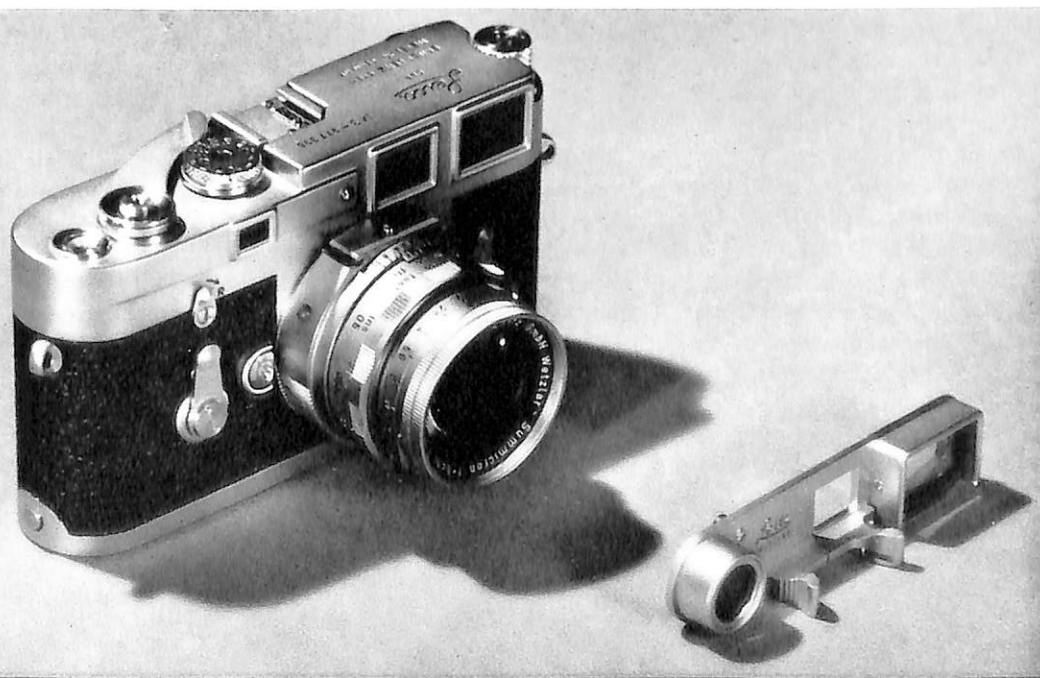


EXPOSURES between 1/200th sec. and 1/2 sec. yield normal negatives; most film produces best results in this quite wide range.

NORMAL DEVELOPMENT of extra-long, 200-second exposure gave flat, lifeless results. Law of reciprocity failed badly here.



ANOTHER 200-SECOND exposure produced a normal print; lens stop was opened, development cut 40% to improve negative.



COMPENSATION FOR RECIPROCITY CHARACTERISTICS
OF SOME 35mm BLACK AND WHITE FILMS

FILM	1/10 SECOND	1 SECOND	10 SECONDS	100 SECONDS	15 MINUTES
Anso Super Hypan and Versapan		1.4 ½	4. 1½	10 2½	NR 4
Kodak Tri-X	1.4 ½	2.2 ¾	2.8 1½	NR 3	NR NR
Kodak Plus-X		1.5 ½	3. 1½	NR 2½	NR 4
Kodak Panatomic-X		1.4 ½	2.2 1	8 2½	NR 3½

NOTE: As longer exposures are made, in these exposure time-ranges, contrast is built up in the negative. Usual procedure is to increase exposure, as indicated, and give less development to produce more normal contrast. In 10 second exposure range, give about 30% less development time; in 100 second exposure range, about 40% less; in 15 minute range, about 50% less. Since this varies with different film-developer combinations, some experimenting is necessary.

these emulsions work well together for normal photography, unusual conditions sometimes make one of the emulsions behave differently than the others. This is why there is sometimes a color shift or over-all color cast in a picture exposed at extremely low light levels or extremely high ones, even if the light is of proper color balance.

If all of this, so far, has been new to you, you may wonder why no one ever told you about it before, and why we're telling you now. There are a couple of reasons. To begin with, film manufacturers didn't think that enough people were concerned with photography under conditions where the films didn't respond predictably. And until just recently, this was probably true. Then a very interesting development took place — there were, all of a sudden, many exposure meters on the market that were inexpensive enough to be bought and owned by many photographers, both amateur and professional. And these meters were very sensitive, giving accurate readings at very low levels of illumination.

And here was where things got confused. An exposure meter, of course, no more reads exposure than a speedometer tells you how fast your car is traveling. A speedometer tells how fast your wheels are going around. And an exposure meter tells you how much light is falling *on* or reflecting *off* a subject. But it doesn't know how the film will respond to this light under all conditions.

Suddenly people had exposure meters that said to make pictures at f/11 at 1/50th and the exposures were good. The meter said to make pictures at f/11 at 1/5th of a second, and the exposures were also good. And then the meter said f/11 at five seconds and when the negatives were thin, or transparencies dark, they blamed the meter. Yet, the meter was accurate.

Now, most Leica users will not be using their equipment for ultra-short exposures, but they may be having problems when exposing for longer than a few seconds. So here is a chart which can be a *guide* to exposures made under longer-than-normal conditions.

As a *guide*, it is only that. The data represent average characteristics of their group, but particular samples may exhibit slight variations. Also, because constant changes and improvements are made in the manufacture of sensitized products, often without

COMPENSATION FOR RECIPROCITY CHARACTERISTICS
OF SOME 35mm COLOR FILMS

FILM	1/10 SECOND	1 SECOND	10 SECONDS	100 SECONDS	15 MINUTES
Ansochrome D/50		1.5 ½ 05M	2.3 1 10M	4. 1½ 10M	8. 2½ 10M
Ansochrome D/100		1.5 ½ 05R	2.8 1½ 10R	4. 1½ 10R	8. 2½ 10R
Ansochrome T/100	1.5 ½ 10R	2. ¾ 20R	2.5 1½ 20R	6. 2 20R	8. 2½ 20R
Ansochrome D/200	1.5 ½ 05R	2. ¾ 10R	4. 1½ 10R	7. 2½ 10R	NR 3½ 10R
Kodachrome-X		1.5 ½ 05M	2.2 ¾ 05M	6. 1½ 10R	10R 3½ 30R
Kodachrome II Daylight		1.8 ¾ 10R	3. 1½ 20R	8. 2 25R	NR NR
Kodachrome II Professional Type A	1.5 ½ 05R	2. ¾ 10R	4. 1½ 20R	7. 2 25R	NR 5 50R
Ektachrome-X		2.2 ¾ 05Y	3.2 1½ 20Y	NR 2½ 40Y	NR NR
High Speed Ektachrome, Daylight	1.3 ½ 10B	2.2 1 10B	3.5 1½ 05G	12 2½ 05M	NR NR
High Speed Ektachrome, Type B		1.8 ¾ 05G	3.2 1½ 10G	10 2 05Y	NR NR
Kodacolor-X			2.3 1	7 2	NR

NOTE: Calculated exposure time is multiplied by first figure. Better still, lens opening is increased by number of stops in second figure. Corrections include consideration for filters when required. It is always best to open up the lens, rather than increase exposure time.

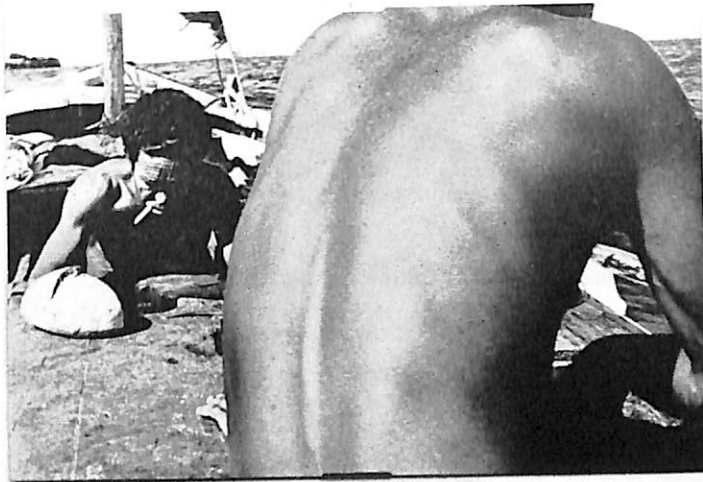
Blank Space means no correction required.
NR means exposures not recommended in this range.

announcement, the characteristics of material of the same type may vary from the data given here.

The data given are the results of some years of testing and record keeping and suggestions from manufacturers, but I must stress that they are not foolproof. The chart is merely a guide to allow you to handle longer exposures with some confidence.

Please note, too, something that may appear very confusing and always results in people sending me indignant letters pointing out how inaccurate the charts are. In many cases you will find that the correction is given in f/stops or in increased time, and in the longer exposure periods, especially, there appears to be a discrepancy; for the suggestion will be to open up, say two stops, or to increase exposure by six or more times. People scream at this, and point out that two stops is only four times more exposure. Ah yes — but when we need four times more exposure, it's because the exposure is long to begin with, and when we give more time, we merely compound the problem. On paper or on an exposure meter, it's true that one stop more is twice as much exposure, and two stops more is four times as much, but in the strange mathematics of reciprocity failure, actual practice will show that an increase in time brings the exposure to a point where even that isn't enough and more is required.

And one very important thing to remember is *that reciprocity failure is not a failure of the film, rather, it is a characteristic of it*. It merely represents the failure of a law of physics that was never intended to apply to photography in the first place.



new ways to live with your photos / *Louis Stettner*

outside prints are startling

While much originality may be put into taking photographs, the same old dull treatment is given to the most imaginative prints, in home surroundings. They are tucked away in a portfolio, to be taken out and passed around, or mounted in an 11" x 14" format, framed and appropriately hung. Their size is such that, to appreciate them, you have to come closer, enter into a special relationship with the photographs, to the exclusion of everything else in the room.

In looking for a more stimulating variety of presentations, I became interested in trying to make the photograph, by greater enlargement, a living presence felt in the room, no matter where one was or what he was doing. I wanted to make it an integral part of the living quarters, with the same natural placement as a kitchen table serving its function, instead of something that had to be isolated in order to be appreciated.

I chose my Pepe and Tony (Spanish Fishermen) series to be enlarged to murals, because I felt the dominant elements in the photographs: ocean, sun,

and the monumental shapes of fishermen doing an age-old task, lent themselves particularly to large size display. However, I soon found out when hanging them, that photographic murals are much more overpowering than, say, paintings of the same size. No more than three or four murals (the largest was 30" x 45") could be hung in the average-sized room, without a feeling of overcrowding. I also found it is preferable to leave one or two walls blank, rather than monotonously hanging them all around the room.

I also experimented with getting the photographs off the walls. Instead of the usual one-dimensional presentation, I made a small, self-supporting triptych, mounted the prints on wood panels, so that they could be placed on a table or desk, and were capable of being changed, rather than always in the same static position. I chose photographs that were taken with the idea of being shown together. Both approaches, mural and triptych forms, I feel, give photographs not just a chance to be reviewed, but a chance to be lived with as well.

avoiding tropical troubles / *Patricia Caulfield*

defeat high temperature and humidity

How hot will it be? How humid? Should I use silica gel to keep my film dry? What's the best way to prevent fungus? How much less exposure should I give because the sun is so bright? These and countless other questions plague any photographer about to embark on his first trip to the tropics.

There is no pat answer to any of them. Heat and humidity, the causes of damage to unprocessed film in the tropics, vary widely from place to place and in any one place at different times of year. The length of your stay and the specific conditions under which you'll be traveling and living also determine the precautions you should take. Exposure is tricky, too. The solution to the problem is not as simple as just giving less exposure than you would for like subjects in temperate climates.

I've visited several places in the tropics, and have traveled in many different ways. Strangely enough, my film was more endangered by heat and humidity on a simple, civilized little car trip in Florida than on a three-week expedition in a South American equatorial rain forest. Why? Because a car interior can heat up unbelievably in the sunlight. And when I

left the car for more than a few minutes I had to remember to take the film — exposed and unexposed — with me and put it in the shade. On the longer trip in the jungle I could keep most of the film in the shade all of the time in our base camp. Another problem on my car trip was the danger of moisture condensing on exposed film when I went from cool, dry, air-conditioned interiors to the hot and steamy outdoors.

But, for a month of Caribbean island hopping, for instance, I found minimum precautions necessary even though it was a long trip. Except when I was traveling to and from airports by car, my film was in my hotel rooms, which were usually not air-conditioned. (While the Caribbean sun is hot, a constant breeze keeps the shade cool, and unair-conditioned island buildings, if properly constructed, can be comfortable even in summer.)

Generally speaking, base the precautions you take to protect your film on the type of trip you are taking. Check into likely conditions before you go — and if you err, err on the side of caution.

When traveling in the tropics I try to carry all my

HIGH CONTRAST between the shadows and highlights in bright tropical scenes makes exposure bracketing advisable for best results.





SUB-TROPICAL FLORIDA can sometimes be harder on photo gear than real tropics. Sun made a slow oven of author's car interior.

film in my hand luggage, since a few minutes of broiling in direct sun while a bag is waiting to be loaded on a plane can heat it up considerably. But on this Caribbean trip, and on many others I've taken, I had too much camera equipment to be able to handle the film as well. So I wrapped the unexposed film in several layers of newspaper, an excellent insulator, and placed my clothes around the package in a large suitcase for actual traveling. Despite this insulation, I was extremely careful about the whereabouts of my bag. It was never left in the sun for more than a minute or two on the trip from my hotel room to the airport; it was immediately unloaded at the airport and taken into the terminal, where it stayed until my flight had arrived and it could be loaded on the aircraft. On arriving at my next destination, I followed the same procedure in reverse.

All the film except that which I planned to use on the day's shooting remained behind in my hotel room. In the field I carried film in a small insulated sandwich bag. This bag holds at least 10 to 15 rolls of 35mm film in their original boxes — more than enough for the most trigger-happy photographer. I left the film sealed in its airtight cans or boxes until the last moment before loading it into the camera.

Once the airtight factory seal was broken, the film was vulnerable to humidity, which is even more dangerous than excessive heat. I left exposed film in the insulated field bag until I was ready to retire. Then I added it to the previously exposed supply, which I stored in an airtight plastic bag that I kept in

another, larger, insulated bag. This bag was opened only late at night because it is cooler then, and cool air can contain much less moisture than warm air. If I opened this sealed storage bag in the heat of day and resealed it, moisture would actually condense on my film at night!

use silica gel

In Florida, the main problem I had anticipated having on a 10-day car trip in summer was humidity, and I took the added precaution of packing with my exposed film silica gel (treated with a color indicator), which absorbs moisture from the air. In itself, silica gel isn't the answer to the humidity problem: it must be used correctly. It soon becomes saturated with moisture and incapable of absorbing any more if you leave it exposed to the air. So, I keep it in a sealed package, such as the plastic bag in which I store my exposed film, and exclude as much air as possible from the package. Once silica gel has become saturated, you can eliminate the moisture it contains by heating it in an oven for about 30 min. at 400°F. To tell if silica gel needs the oven treatment, just look at it. Desaturated silica gel is bluish; saturated silica gel is pinkish. Heating saturated silica gel to the proper temperature for the proper time, turns it from pink to blue. Since I've successfully desaturated silica gel by heating it over a campfire of unknown heat for I'm-not-sure-how-many minutes, I imagine that the official time and temperature mentioned above aren't really critical.



A TROPICAL RAIN FOREST has climate which rots leather quickly. But silica gel saved all but one film from moisture damage.



SLOTH IS RESCUED during Operation Gwambwa, a South American effort to remove animal life from drowned areas behind new dam.

While I avoided problems with my film on this trip, I did have some trouble with my lenses, because of air conditioning. Florida's gulf coast really steams in July, and I habitually left the air conditioning on full blast all night in my hotel rooms. One morning I wanted to photograph the rising sun in Everglades National Park, and so arose about an hour before dawn to drive off to my location. Just as the sun rose and as I started to shoot, I glanced at my lens and saw moisture had condensed inside it, apparently on several of the air-glass surfaces. The moisture didn't evaporate for an hour or so, and I did not do any sunrise shooting that day. Since then, I've tried to leave my cameras in unair-conditioned quarters if I planned to take early morning pictures in hot and humid climates.

I have been on two fairly long camping trips in the tropics. On one, in Surinam, I had no trouble with my film even though I was near the equator and the temperature was 130°F or higher in the sun at mid-day. I just followed the precautions discussed above, leaving my supply of unexposed film and my insulated bag with exposed film under the thatch-roofed, open-sided shelter in which I slept. The thatch was effective in insulating the area below it from the heat of the sun; the lack of walls allowed air to circulate and breezes to cool the area, and my film fared better than on my Florida car trip. I wasn't so lucky on the other camping trip.

Traveling and living in Guatemala's Petan jungle would have been just as simple as the Surinam trip had not the rainy season made an early unscheduled appearance. I have never been so wet in my life, and

I returned to civilization with a green and gray garden growing inside and outside my gadget bag and on other leather and cloth camera accessories. But my precautions did pay off with my film. I cooked the silica gel over the campfire every few days to be sure I was keeping my exposed film safe from the moisture. And, since most of the film wasn't in the cameras for more than 24 hours, it wasn't damaged. The only roll I lost was of high-speed color, which I had left in one camera body for about a week, planning to use it only for specialized purposes. When I tried to rewind it, it wouldn't budge. I removed it from the camera in the dark, and tried to salvage some. When it was processed, it had dreadful blue and purple streaks running through it, and was useless. I had some trouble with my lenses too: moisture condensed in several, and stayed there for days. Guatemala's rainy season made Florida's summer seem like a desert.

Just a word about exposure in the tropics: contrary to popular belief, you can't give less exposure for most subjects in the tropics. While the sun is hot and bright, shadows and foliage are very dark, and most scenes are extremely contrasty. If there is any doubt in your mind, bracket your exposures, giving as much as several f-numbers more exposure than you think necessary.

On this trip I should have packed cameras and lenses as well as film in airtight bags with silica gel, for they can also be ruined by fungus. Since I had brought only enough gel to pack with the film, I wasn't able to, but I would recommend doing it for any tropical trip of more than a few weeks duration.



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